

## **Appendix O**

# Wire Free Power Adapter For Mobile Devices

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## Background

In some cases, after-market contacts may be difficult to add to a device externally. For example, a hand-held PDA, a cellular telephone, or other small electronic devices and gadgets, may not have contacts available to connect. Also, in some of these devices, the battery is internal and not externally accessible, therefore making it more difficult to exchange a cover part or a battery in order to integrate contacts.

What is clearly needed is a method and a system that allows a set of external contacts to be integrated into or onto the device packaging, for example, in a protective carrying case that offers additional protection for the device against physical abuse as well as offering contacts to allow charging of the device in said carrying case.

## Description of the Embodiment

**Figure 1** shows a carrying case 100 for a personal electronic device, comprising a main body 102, a lid 101 that is connected at the hinge 110, a display opening 103, and additional openings 104 a and b for user interface elements such as buttons, etc. It is clear that depending on the device in question, the shape and number of those openings may differ dramatically from one device to another.

Also shown is an external connector 105 plugged into the device that may provide electrical connections. In other cases the connector may not be visible from the outside.

**Figure 2** shows an isometric view of the case from the bottom, sideways, again with main body 102, cover 101, and connector 105. Now visible are contacts 201a and 201b, which are used to establish a connection with the surface when the device is laid on the surface, as described earlier. The advantage of this embodiment is that the device does not have to be removed from the protective carrying case 100, as it would have to be if the user had to place the device in a cradle or similar device for recharging, where the

device must be removed from the carrying case before placing it in the cradle.

The electronics for the device case 100 may be, in some cases, integrated into the walls of the case, or in other cases, for example, in the enclosure 105 that holds the connector and possibly also additional electronics.

Figure 3 is a side view of the same device case 100, with main body 102 and cover 101. An opening at hinge 110 is where the device slides into the case 100 in this example. Depending on the its characteristics, the device may be inserted into the case 100 from the side, bottom or back side rather than from the top, and or there may be an opening secured by means of a zipper, hook-and-pile tapes, snaps, or some other fastening method to hold the device in the case.

In some cases the case may be formed of a hard material, such as metal and/or plastic, solely or in combination; in other cases, the case may be formed of a pliable material such as leather, soft plastic, fabric, or other similar material of various types. In some cases, the case 100 may be padded to offer additional protection and to make the case more comfortable for a user to wear.

There are many other possible variations of the novel art of this disclosure. For example, the case may have integrated quick-release buttons intended for use in conjunction with belt holsters. There may be push-buttons or snap-buttons to attach the case to a belt or other wearing apparel. In some cases, the case 100 may have an attached loop to go around the user's wrist, neck, or some other item.

Cases of the type disclosed herein may be used for PDAs, cell phones, MP3 players, cameras, or variations or combinations of these and other similar portable personal electronic devices.

In some cases, using a sleeve or enclosure can also be used with non-contact power delivery (e.g. induction, capacitive etc. as discussed earlier). In some of those cases, for example, the base can have the coil or film for the induction receiver, etc.

In yet other cases, a device that already has everything or some of the wire less power technology integrated, it can be augmented or complemented with a sleeve or enclosure. For example, if the device has contacts, the case can has holes for the devices contacts or metal plates that acts as a proxy between the base and the device. On the other hand, the device can already has the adapter chip and the case just adds the contacts, etc., and the sleeve may include an inductive receiver or vice versa.

In some cases, the sleeve or enclosure and the device may be designed at the same time as one system.

For example, a special connector at the back of the device and the electronic already included in the device, or, pre-designed mechanical attachments for the case etc.

Further, in some cases the sleeve or enclosure may be designed to have more than one set of contacts such that the device can be placed in more than one way (e.g. flipped, or with cover opened and closed, etc).

Also, in some cases, added other electronics such as extra memory, wireless connection, led indicators, additional battery, I/O connectors, etc. maybe included in the sleeve or enclosure. As disclosed earlier, also data connection (wireless, through contacts, etc) between the device/case and the base may be included1.

In yet other cases, the wiring to the device may be through an expansion connector, through charge contacts, or through an external battery contact of the type currently provided with some devices, or any other similar suitable connections as are well-known to those skilled in the art.

Attached with the present application are Appendices A through N, which are incorporated herein by reference.





